

LOWER TANANA FLASHCARDS

By

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# Abstract

As part of a study of Lower Tanana, I found it expedient to create a learning tool to help myself gain familiarity with Lower Tanana. I chose to employ Anki, an open-source tool for creating digital flash-card based learning tools. With Anki, I created cards for individual Lower Tanana words and phrases. In producing the computer flashcards for Lower Tanana, I realized that they could serve as a highly flexible system for both preserving and learning Lower Tanana. Further, because of the built-in system flexibility, such systems can be created to aid in preserving and teaching other endangered languages.

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Для Тарасика и Машеньки. I miss you.

In memory of Theodore Suckling of Nenana and Manley Hot Springs.  
Ted, when I visit, I'll keep my ears and heart open to hear your voice.

# Introduction

## Overview

This paper accompanies a language learning tool I made and used for learning the Lower Tanana language. (If you are interested in learning Lower Tanana right away, you might want to skip to page 8.) Lower Tanana is an Athabascan language that was spoken in Interior Alaska along the Tanana River from the Goodpaster River to the Tolovana River including the area where modern-day Fairbanks is now (Krauss et al. 2011).

The learning aid I made is a set of electronic flashcards meant to be used with a cross-platform, open-source program called Anki. Anki is a vehicle for learning and for long-term retention of information. It uses a spaced repetition algorithm, and it is customizable and easily distributed because of its digital format. Anki is available free of charge for desktop computer and for Android phones. A paid version exists for iPhones.

The content of the flashcards has been derived from the hard work of many people in the form of materials archived in the Alaska Native Language Archive (ANLA)<sup>1</sup> and publications of the Alaska Native Language Center (ANLC).

## My story

I developed these flashcards to solve a problem. I wanted to work with some traditional stories<sup>2</sup> told by elder Moses Charlie. The stories, though, are in the Lower Tanana language and I did not understand them. As I sat flipping through pages of transcription and partial translation, I found that I did not have the knowledge I needed of Lower Tanana in order to decipher the words I didn't know. On the other hand, I had access to the resources in the Alaska Native Language Archive (ANLA), including resources for Lower Tanana.

A search for Lower Tanana materials in the ANLA, revealed the hard work of many people who have contributed to ANLA's collection. Some of these materials are easy to pick up and use without specialized knowledge of linguistics and some are not. Some are polished and published and some are rough handwritten drafts. All are the culmination of the hard work and cooperation of many people and are wonderful, irreplaceable resources. My problem with all of these resources, however, regardless of their content, was figuring out a way to use these resources effectively. I knew I had the information I needed at my fingertips, but I still couldn't use it.

- 1 ANLA is a trove of wonderful materials and information not found anywhere else. I encourage anyone interested to investigate further. The ANLA catalog is available to [search online](https://www.uaf.edu/anla/) at <https://www.uaf.edu/anla/>. Many materials are available for download. For items not available online, contact ANLA at [anla@alaska.edu](mailto:anla@alaska.edu) or (907) 474-7436.
- 2 You can find Moses Charlie's 1961 stories in ANLA. The stories were recorded and later transcribed and partially translated. Audio files of Moses Charlie telling the stories is available. An index of written copies, including transcriptions, partial transcriptions, and translations, can be found under identifier TN012D2014.

I started asking myself questions: “What tool could help me get the available information out of the archive and into my head?” “Could that tool help someone else?” “Could that tool help someone expand their knowledge of or relearn their ancestral language?” and “Could that tool could help anybody who's interested in learning Lower Tanana?”

With these questions in mind, I looked over the Lower Tanana materials in the archive in their myriad of formats and orthographies. And then, I set about making a tool to get the most out of the available resources and familiarize myself the Lower Tanana language. These cards are the result.

# Literature Review

## Documentation of Alaska Native Languages

### Russian America

Efforts of outsiders to understand and even document Native Alaskan languages have a long history. The drive to understand and communicate began right away, at first contact between Native Alaskans and outsiders. The first documented contact between Russians and Native Alaskans was in 1741 (Library of Congress et al. 2002a). The abundance of fur-bearing animals in Alaska, especially sea-otters was an attractive and lucrative prospect to the Russians. By the mid-1700s, Russian fur-trappers<sup>3</sup> (called *promyshlenniki* in Russian) were hunting sea otters for fur along the Alaskan coast and by the late-1700s had established permanent settlements (Library of Congress et al. 2002b).

The presence of the Russian fur-trappers had devastating effects on the peoples of the coast, especially the Aleuts, whom the fur-trappers enslaved and exploited in order to hunt furs (Miller 2005). Along with the Russian fur trappers came many changes: new goods, new diseases, alcohol, the Russian language, and the Russian Orthodox religion. However, overall, the Russians were not interested in Russifying the Native Alaskans. The fur-traders were interested in making a profit, not changing Native culture. And the Russian Orthodox church was content with the syncretic adoption and assimilation of Russian Orthodox elements into the existing Native beliefs (Kobtzeff 1984). The Orthodox Church did not demand that Natives change their entire lifestyle and belief system as American missionaries later would.

This is not to say that the Russian presence did not bring social changes. As linguist Michael Krauss points out, many Russians married Native women and had children who spoke both their Native language and Russian. Russian loanwords for new items like glass and watches or clocks made their way inland. Although Russian fur-traders did not venture into Interior Alaska, even Lower Tanana has Russian loanwords for coffee and tea (Krauss 1996). New goods and ideas made their way into places where Russians themselves never went. Despite the disruption the Russian presence in Alaska caused, the use of Alaska Native languages remained high in Alaska throughout the Russian-American period.

3 The Russian fur trappers of this era are known as *promyshlenniki* from Russian *промышленники* or “traders”.

Additionally, during this period Russians documented a significant amount about the Alaskan lands, peoples, cultures, languages, climate, plants and animals (California Academy of Sciences 2014). One contributor to this body of knowledge was a Russian Orthodox missionary, Ivan Veniaminov. He lived from 1797 to 1879. He was born Ivan Evseyevich Popov and renamed Veniaminov later in his life. He arrived in Alaska in 1824 and was a very significant documentor of Tlingit and several dialects of Aleut (Black 2004, 247).

## **U.S. Alaska**

Documentation of Alaska Native languages continued after Alaska became a U.S. territory in 1867. Even early on in the 1900s, audio recordings were made of Alaska Native languages. In the Alaska Native Language Archive, there are two: one of Siberian Yupik, and one of Aleut.<sup>4</sup> In 1980, linguists Krauss and McGary noted that there had already been 200 years of research on Alaska Native languages, and thousands of contributors (Krauss and McGary 1980). The study of Alaska Native languages is not new or uncharted territory. The depth of documentation for any given language, however, depends on individuals and on whether somebody made the study of a particular language their life's work. For every well documented language, there are key people who did most of that documentation. Often missionaries, like Veniaminov, were the people who dedicated a lifetime to documenting a language.

## **Missionaries as linguists**

Missionaries are and have been substantial contributors to linguistic research, not just in Alaska, but around the world. Missionaries are responsible for many linguistic resources and a large body of linguistic documentation. For example, The Summer Institute of Linguistics, a religious institute, publishes an annual catalog of the world's languages, the *Ethnologue*, which has been an important resource for linguists. Additionally, the Bible is the most translated text in the world according to UNESCO's database of book translations.

A missionary who made a massive contribution to the documentation of Alaska Native languages was Jules Jetté. Jetté was a Jesuit missionary from Montreal who lived from 1864 to 1927. He came to Nulato, Alaska in 1898 and ended up spending most of the rest of his life in Alaska (Laugrand 2005). Like many Jesuits, he was fastidious in his documentation, especially his language documentation. He left behind thousands of pages of handwritten manuscript. His crowning linguistic achievement was the creation of an extensive Koyukon Athabascan dictionary with some 30,000 entries (Krauss 1980, 20). It was not published in his lifetime. It was not published until 2000 with the help of Eliza Jones, a native speaker of Koyukon, and linguist James Kari as an editor.

4 An audio recording of Siberian Yupik was made in 1901 by the Jesup Expedition and of Aleut by the Ryabushinsky Expedition in 1909.

## Language policy and status

Language policy has had an effect on the health of Native languages in Alaska. One of the most striking examples of the lasting effects of language policy was the “English-only” policy of Sheldon Jackson.<sup>5</sup>

Sheldon Jackson was a Presbyterian minister from New York state who lived from 1834 to 1909. He began working in Alaska in 1877 and became General Agent of Education in Alaska in 1885 (Haycox 1984, 18). Unlike Russian missionaries who encouraged Native Alaskans to adopt key elements of Christianity while retaining their traditional language,<sup>6</sup> lifestyle and belief system, Sheldon’s aim was more invasive and disruptive. Jackson followed an anti-Native language policy as espoused by his contemporary S. Hall Young who wrote in 1880, “...we should let the old tongues die – the sooner the better... and replace these languages with that of Christian civilization, and compel the Natives in all out schools to talk English and English only” (Krauss 1980, 23). This goal and the English-only policy intended to accomplish it, was very harmful to the transmission of Native language and culture.

Native adults were told to only speak English to their children and that the children needed to speak English in order to succeed (Urschel 2006, 5). Native children were often educated in mission schools. Being in a school meant not accompanying their parents on the seasonal movements of a subsistence lifestyle, learning how to speak, hunt and survive in the traditional manner. At the school, speaking in Native languages was discouraged. Traditional Chief Peter John remembers being physically punished for speaking Lower Tanana at St. Mark's mission in Nenana (John 1996, xv).

As a result of these policies, many Alaska Native languages, including Lower Tanana are either no longer spoken or in danger of being lost as a spoken language. It only takes one break in the chain of transmission for the language be lost. If one generation stops speaking, the language does not transfer to the next generation.

The Lower Tanana language is a moribund language. Though several dialects of the Lower Tanana language were spoken, only the Minto dialect survives. The Chena dialect became extinct in 1976 with scant documentation (Eberhard, Simons, and Fennig 2019). The better-documented Salcha-Goodpaster dialect became extinct in 1993 (Tuttle 1998, 4). The villages of Nenana and Minto have been the last strongholds of Lower Tanana. Even there, however, English is the dominant language of communication among even elders. The younger generations may know some vocabulary but are unable to converse in Lower Tanana.

5 Jackson's policy was not unique. The federal government, with Bureau of Indian Affairs helping with implementation, forced Native families to send their children to "Indian Schools" throughout the U.S.

6 Russian Orthodox missionaries encouraged use of Native Alaska languages as they “saw accessing spirituality through one's native language as fundamentally more powerful” (Gary Holton, email to Summer Dougherty, April 23, 2019). This encouragement of Native languages extended to study and documentation of Native language as well as development of religious materials in Native languages as seen with Russian Orthodox missionary and priest Ivan Veniaminov.

## Documentation of Lower Tanana

### Lower Tanana documentation begins

Over the years, many people have done linguistic work documenting the Lower Tanana language. As Krauss and McGary note, Judge James Wickersham was the first person known to document any part of the Lower Tanana language by making a short wordlist in 1903 containing the names of several animals in the Nenana area (1980, 365). Around 1905 linguist Richard Geoghegan<sup>7</sup> made a comparative wordlist of Tanana, Gwich'in and Tutchone (1980, 365). In 1959, the Summer Institute of Linguistics linguists, Paul and Trude Milanowski, did field work in Nenana and produced an analysis of the sound system and a wordlist (1980, 365). Also in 1959, Herbert Zimmerman similarly analyzed the phonemic inventory of Nenana Athabaskan (1980, 365). In 1960, Frederica deLaguna and Katherine McClellan mentioned some linguistic material in their field notes (Krauss and McGary 1980, 356).

### In-depth documentation begins

However, in the almost six decades since documentation of Lower Tanana began, no serious work had been done. Short wordlists and descriptions of the sounds of the language were hardly extensive documentation. That changed in the 1960s, though, when linguist Michael Krauss came to Alaska and began a field study of Lower Tanana's Minto-Nenana dialect. Krauss' research formed the basis of much research that followed.

In the 1970s, linguist Jeff Lear began collaborating on various projects relating to Lower Tanana (Tuttle 1998, 6). During the 1960s and 1970s Mertie Baggen collected a significant amount of fieldnotes on Lower Tanana lexicon (Alaska Native Language Archive 2011). In the 1980s, linguist Jim Kari began working on the Tanana lexicon and placenames. James Kari created the largest dictionary of Lower Tanana which is available from ANLA in its 1994 draft form. For more information on Kari's 1994 dictionary, see "James Kari's Draft Dictionary" section in the appendix on page 19. In the 1990s, linguist Siri Tuttle began her contributions with a thesis comparing the Minto and Salcha dialects. Tuttle's involvement in Lower Tanana linguistics continue to the present day.

### Available resources

It was in these decades, from the 1960s to the 1990s, that linguists and Lower Tanana speakers collaborated to record Lower Tanana speech. Narratives and stories in Lower Tanana that have been published include *This is the Way We Make Our Baskets*. *Dats'en'* published in 1983 and narrated by Ellen Frank; *Lo K'eytth'ok Tr'eghohn*; *K'okhethdeno de'on: Moving Around in the Old Days* published in 1979 and narrated by Matthew and Dorothy Titus; *The First Christmas Tree*; *Ts'eba Tthadala* published in 1991 and narrated by Peter John; and *Ode Setl'oghwnh Da'*; *Long After I Am Gone*

7 Interestingly, this is the same Geoghegan known for being the Esperantist who designed the Esperanto flag,

published in 1992 and narrated by Teddy Charlie. The traditional Moses Charlie stories are unpublished.

# Methodology

## How to use the resources

The form of the language learning tool I made was shaped by the resources I had available to me. My available resources consisted mainly of Lower Tanana narratives, Lower Tanana-English dictionaries, verb paradigms and some language learning lessons which consist of various phrases and their translations into English.

Because there are no classes available for Lower Tanana, I knew that the tool I created would have to be self-guided. I also knew whatever I developed would have to follow a bottom-up approach of learning patterns and grammar directly from the language rather than a top-down approach like is presented in a grammar book; there is no basic Lower Tanana grammar book.

## How not to forget

Part of learning is remembering. I can read through a dictionary if I am patient, but it won't do me any good; I won't remember the information. If we're not reminded or do not remind ourselves, we forget most new information within the first minutes, days and weeks of when we learn it.<sup>8</sup>

However, each time we review or recall the information, the span of time in which we remember it gets longer. We can use this to our advantage. Indeed, we have computer algorithms that do use that to our advantage. Spaced repetition software uses algorithms that are designed to remind us to review and recall information right before we forget. This saves time by producing better information retention for the same amount of time spent studying, by reducing over- and under-studying, and by spreading out studying over time.<sup>9</sup> Additionally, working to recall information, like you do when you use flashcards, produces more effective learning than simply reading over the information again to review it, as in re-reading dictionary entries. Working to recall information creates stronger memories.<sup>10</sup>

## Why flashcards?

I wanted to find a way to give my brain a chance to become familiar with and begin to recognize patterns in the language; I needed a way to start memorizing words and phrases. Flashcards

8 This pattern of how information is forgotten over time is called the “forgetting curve” and was first described, along with the better-known “learning curve” and other phenomena, by German psychologist Hermann Ebbinghaus in his 1885 work *Über das Gedchtnis. Untersuchungen zur experimentellen Psychologie*, which was published in English in 1913 as *Memory. A Contribution to Experimental Psychology* (Ebbinghaus 1913).

9 Spreading out study over time in multiple sessions results in better learning than studying for the same amount of time all in one session. For instance, spending 70 minutes studying one day is less effective than studying 10 minutes each day for a week. This phenomenon is called the “spacing effect” (Ebbinghaus 1913).

10 This effect is called the “testing effect” (Ebbinghaus 1913).

seemed like a good place to start, but there were a few problems. The deck of cards required would be enormous, too big for paper flashcards. It is impossible to listen to the pronunciation of words using paper flashcards. Implementing spaced repetition with paper flashcards would be possible but much too onerous to be helpful. Lastly a deck of paper flashcards is not easy to share or distribute.

## Why Anki?

To solve the problems associated with paper flashcards, I decided on using electronic flashcards. I chose to use a digital flashcard program called [Anki](https://en.wikipedia.org/wiki/Anki_(software)).<sup>11</sup> Anki is a good choice for several reasons: the cards are easily edited, can include media files like pictures and audio, the program is free, open-source, has good support, documentation, and an active user base. The data that is stored in Anki is stored in an open format which means that the Lower Tanana information contained in the cards could be easily extracted and repurposed in the future. Crucially, Anki also uses [spaced repetition](https://en.wikipedia.org/wiki/Spaced_repetition),<sup>12</sup> which I knew I wanted to include in order to make learning as fast and effective as possible. For more information on Anki, see the section on Anki in the appendix on page 23.

## My process

To start making the cards, I gathered materials available in the Alaska Native Language Archive and the Rasmuson Library. The materials came in multiple formats: print materials, scanned handwritten pages, scanned type-written pages, computer print-outs, scanned index cards. I digitized those materials and converted them to PDF if they were not already digitized. I ran optical character recognition software on the PDFs. I then extracted the data from the PDFs and arranged it in a spreadsheet and converted it into a standard orthography. For more information on Lower Tanana orthographies see the appendix on page 20.

Extracting the data from the PDFs required a large amount of hand-editing. The OCR software is not trained for Lower Tanana, does not recognize the barred-L character (Ł or ł), and often registers artifacts from xeroxing as characters. In some cases, transcription was less trouble than editing the OCR output. Using the program Audacity, I digitally snipped large audio files into individual words and phrases to accompany the cards.

With the text and audio I had collected, I made the cards by importing the data into Anki. I then used the cards. I corrected mistakes and misspellings, and I evaluated the cards for ease of use. This process was iterative. I didn't do everything at once. I gathered materials page by page and source by source, and made cards in batches. I experimented with different sources and formats.

From my use of the cards, I found a couple things which made my learning process much easier and more enjoyable. While I began by studying all the cards in one huge deck, and I recommend starting with a subset, or filtered deck first. A smaller amount of material, and the more easily digestible material, and then working up to include more material after you know how the software works and how you work with the software. I replaced or supplemented English with pictures and I very much

11 [https://en.wikipedia.org/wiki/Anki\\_\(software\)](https://en.wikipedia.org/wiki/Anki_(software))

12 [https://en.wikipedia.org/wiki/Spaced\\_repetition](https://en.wikipedia.org/wiki/Spaced_repetition)



recommend substituting out the English, to practice thinking in Lower Tanana, rather than practicing translating between English and Lower Tanana.

## Findings

### How to use these cards

These cards were designed to be able to be used immediately, without needing to study special grammatical or linguistic terms and concepts. The cards are designed to be used as-is. However, certain adjustments will ease use of the cards and make learning more fun and efficient. I will cover these optional modifications below.

### How to access the cards

At the time of this writing, the cards are to be archived and available for download from the Alaska Native Language Archive. In the future, the cards may be available from other repositories such as the Arctic Data Center.

In order to access the cards, you need some sort of a computer. A desktop, a laptop, or a smart-phone<sup>13</sup> will all work. You will also need the Anki software to use the cards. Anki is free for all desktops and laptops and free for Android phones. The version for iPhone is only available for pay. You will also need an internet connection at least once in order to download the program and the cards.

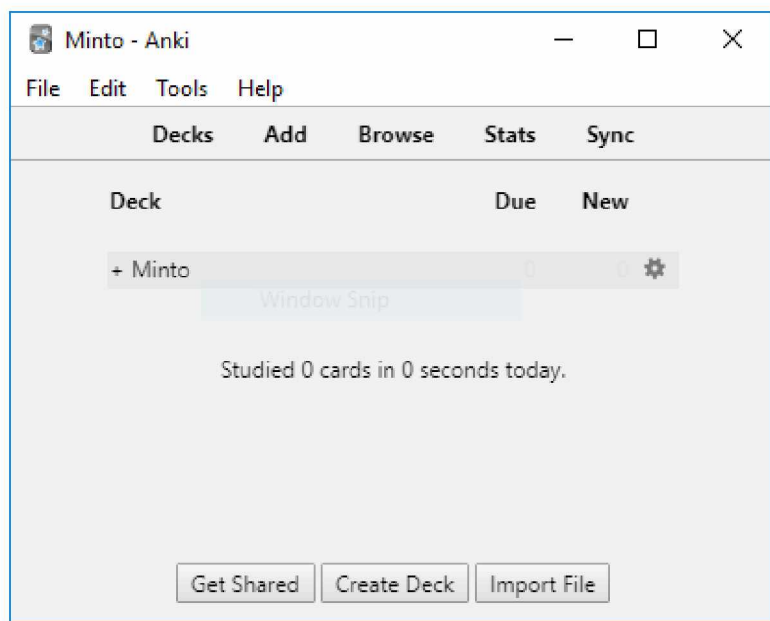
### How to set up Anki

In order to start using the cards, you need to install Anki after downloading it from the website, <https://apps.ankiweb.net>. After installing the software, you need to download the cards and import them into Anki. After this point, the internet is no longer needed. It may be used to store and sync cards, but it is not necessary for the proper functioning of the program.

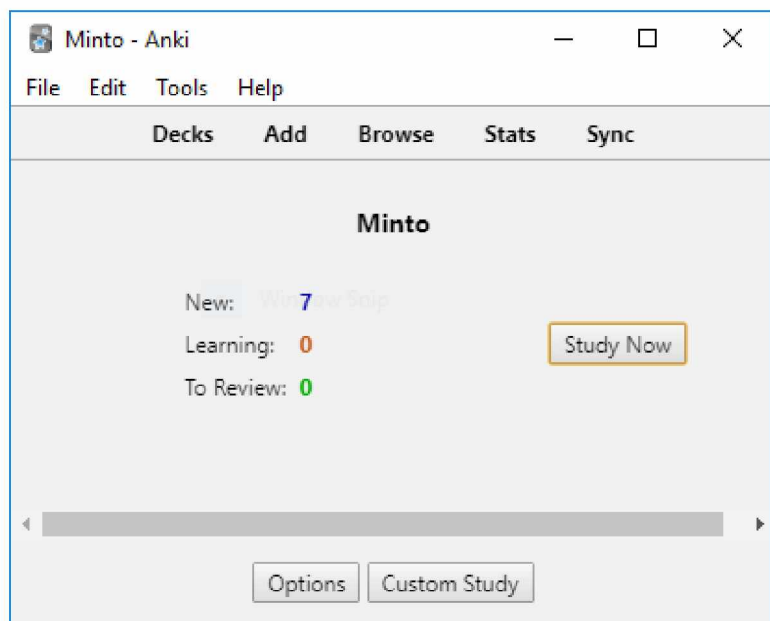
### Studying

Using the cards is simple. You open Anki, click on the deck, and start studying. This is what the program looks like when you open it up:

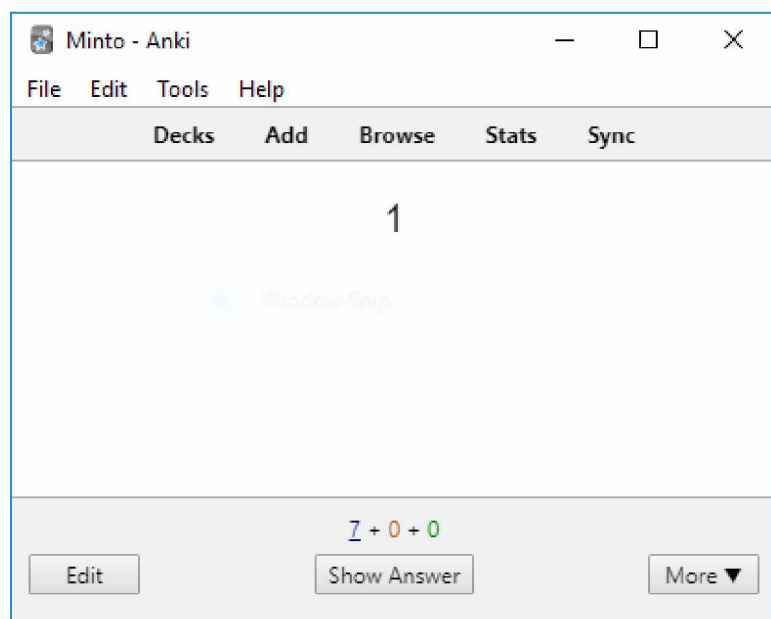
<sup>13</sup> Versions of Anki for smart-phones do not always offer all of the functionality as the computer version of Anki. The version of Anki I had on my Android phone had some, but not all, of the browser functionality described on page 11.



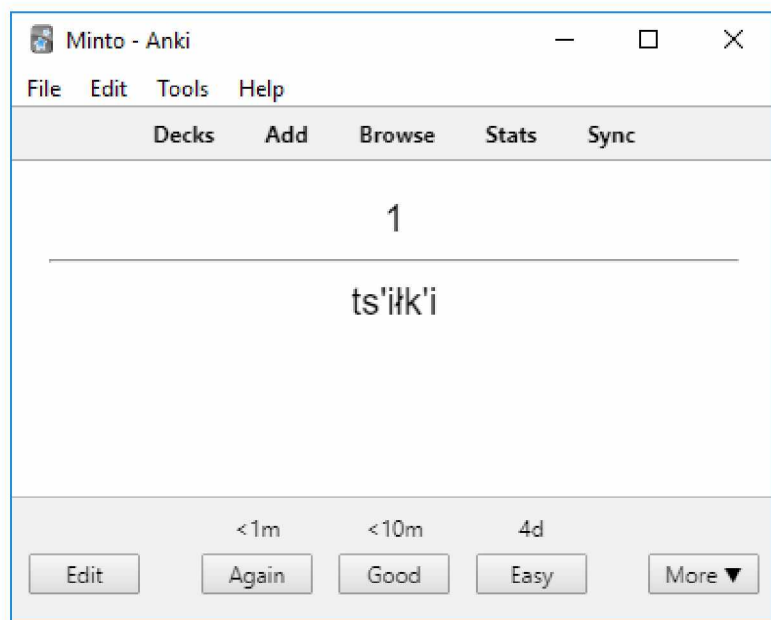
Click on the deck, you want to study. In this example there is only one deck available and it is called “Minto”. After selecting the deck, you are presented with a screen that looks like this :



At this point click “Study Now”. You are then given your first card:



In this example, the prompt on your first card is the numeral 1. Then you try to think of how to say this concept in Lower Tanana, which is *ts'ilk'i*. When you press “Show Answer” you are presented with the Lower Tanana word or phrase. Cards with associated audio files will play the audio when the Lower Tanana word or phrase is revealed.



At this point, after you have considered the prompt and revealed the answer, you give the software feedback on how easily you were able to recall the answer by choosing the “Again” button, the “Good” button or the “Easy” button. This feedback is what enables the spaced repetition aspect of the software.

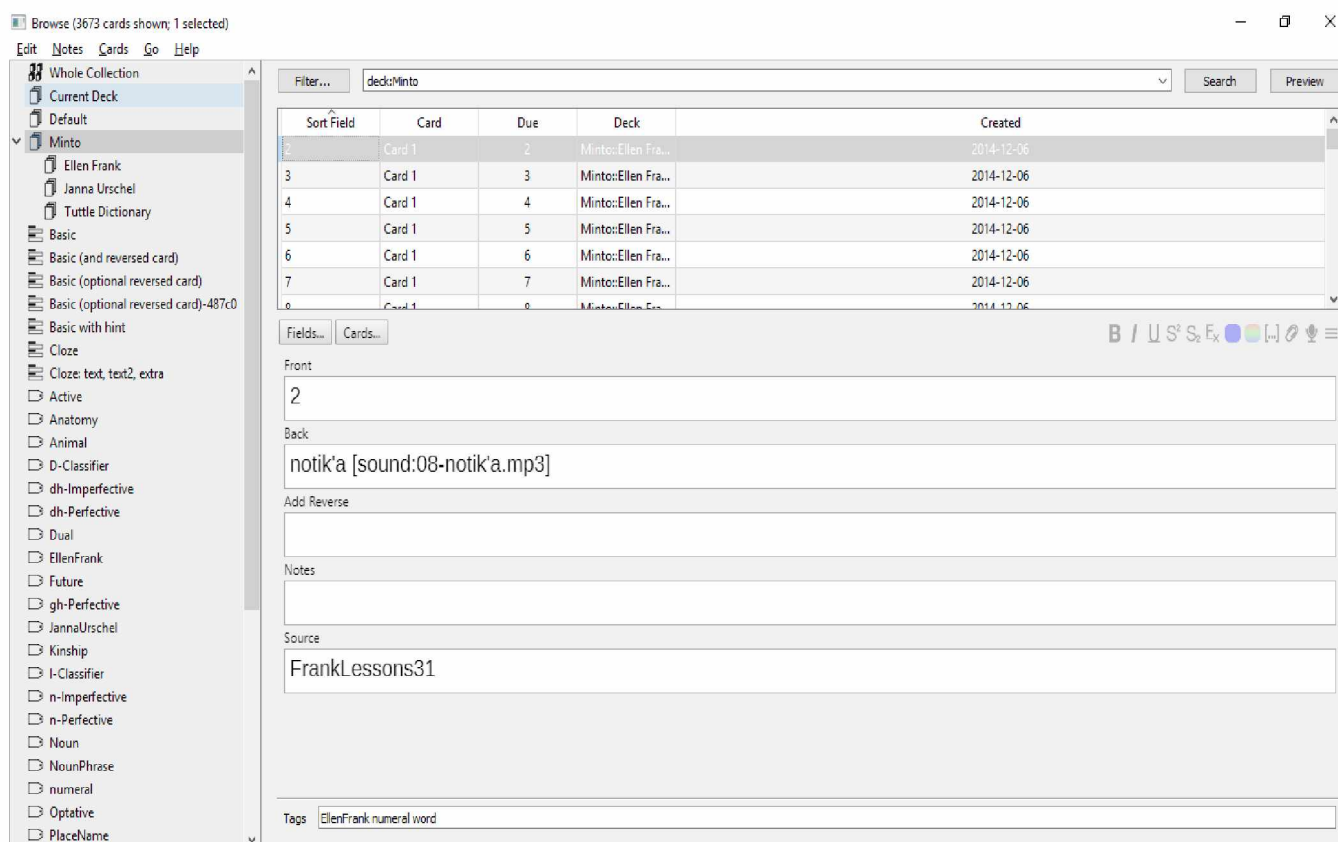
In this particular example, I was able to easily recall the word *ts’ilk’i*, so I would click on the “Easy” button and the software will move on to the next card and show me the *ts’ilk’i* card again in four days. If I was just learning the word *ts’ilk’i*, I would choose the “Again” button and be shown the card again in less than a minute. As you continue studying and your recall of the cards become stronger and stronger, the time spans between when you are shown a card will turn from minutes and days into weeks and months and eventually into years.

This is all you need to know in order to study. If you want to get even more out of the cards though, the next section delves further into how Anki works and how to use it to modify your cards.

## Anki behind the scenes

What makes Anki so powerful and gives the cards the flexibility they have is that the cards are generated from a database. All the information including the Lower Tanana words, the English translations, the grammar information, the card sources, and the audio are all stored in a database which is then used to generate the cards. The scheduling information for each card is also stored in the database.

The Anki software includes a graphical user interface for viewing and manipulating the database; this tool is called the Card Browser. Here is what it looks like:



The column on the left helps you navigate to different decks or view cards of a specific format or tagged with a specific tag. In the section to right of the column, the topmost box contains a list of all cards in the specified selection, in this case a list of 3673 cards in the deck called “Minto.” Underneath the list of cards are sections labeled “Front”, “Back”, “Add Reverse”, “Notes”, and “Source”. These are called the fields.

Front
1
Back
ts'ilk'i [sound:07-ts'ilk'i.mp3]
Add Reverse
Notes
Source
FrankLessons31

## Fields

Fields can be thought of as the front and back sides of a flashcard. Unlike paper flashcards, however, electronic flashcards are not limited to only two fields and, unlike paper flashcards, some fields may be hidden during normal use of the cards. Below is an overview of the fields used for the Lower Tanana flashcards. More information on fields may be found in the [Anki manual](https://apps.ankiweb.net/docs/manual.html#notes-&-fields).<sup>14</sup>

### The “Front” field

The information from the front field populates the question/English side of the card. For example, let’s take the card for the Lower Tanana word *tsayi* which means “tea.” For this card, the “Front” field would be the English word “tea.”<sup>15</sup>

### The “Back” field

The information from the back field populates the answer/Lower Tanana side of the card. In our example, the “Back” field contains the Lower Tanana word *tsayi* and an audio file of *tsayi* being pronounced.

14 <https://apps.ankiweb.net/docs/manual.html#notes-&-fields>

15 Or, ideally, you would replace the English word “tea” with a picture you take of tea steaming in your favorite mug.

## The “Add Reverse” field

Each of the cards has an English prompt (eg Prompt: "I want tea") and a Lower Tanana answer (eg Answer: "*Tsayi k'at*"). But you might also want the prompt to be Lower Tanana and the answer to be English.<sup>16</sup> In this case, the “Add reverse” field allows you to automatically create a new Lower Tanana to English card (eg Prompt: "*Tsayi k'at*," Answer: "I want tea") from the existing English to Lower Tanana card (eg Prompt: "I want tea," Answer: "*Tsayi k'at*"). Simply enter any character or characters (I recommend a “y”) into the “Add reverse” field and the reverse card will be automatically generated. You can delete the reverse card, if you wish, by deleting the text in the “Add reverse” field. More information on the “Add reverse” field is in the on-line [Anki manual](https://apps.ankiweb.net/docs/manual.html#reverse-cards).<sup>17</sup>

## The “Notes” field

This field is a space reserved for you to insert any information or questions you may have. There are many ways to use this field; you can put anything you want in this field or nothing at all. I write any question I have about a card in the “Notes” field.

## The “Source” field

This field contains a tag that records the original source and page number<sup>18</sup> of the information contained on the card. The source field tag is one alphanumeric string made up of the author of the work, a keyword for the name of the work and the page number where the entry was found. For more information on each of the sources, see the “Card sources” section of this paper on page 18.

For example, FrankLessons11 is the source tag for one of the cards (*Nołto' le'anh*. “He is going hunting.”) This means that the sentence is found on page 11 of the 2008 work, *Lower Tanana Athabascan Language Lessons*, by Ellen Frank, James Kari, and Siri Tuttle.

## The “Media” field

This field is reserved for any media files you would like to associate with your cards. This may be audio files that you record of yourself pronouncing the Lower Tanana words and phrases or pictures of objects that symbolize the concept on the card. For example, for the card *Sedredra' kwlá*. (My mittens are missing.), you could attach a picture of yourself looking searching and scratching your head with your missing mittens visible in the picture.

Many cards in the deck already have an audio files in .mp3 and .3pg format. The .3pg format is compatible with mobile phones and with Windows, Mac, and Linux computer operating systems. The

16 You might want the prompt to be LT and the answer to be English if you want to focus on understanding passively but not on actively speaking LT.

17 <https://apps.ankiweb.net/docs/manual.html#reverse-cards>

18 I refer to many texts in this paper. Not everything I reference is published and some documents are available in more than one format, for example, in both print and PDF. Many of the texts I reference are available digitally through the Alaska Native Language Archive (ANLA). Often, the digital resource is a PDF containing scanned copies of papers. The original papers often were numbered but the PDF document also assigns a page number to each page. The page numbers of the original text and the PDF page number do not always match up. I reference pages of unpublished works and manuscripts by the PDF page number.

audio files from native Lower Tanana speaker Ellen Frank are .mp3s and are names with a numerical prefix followed by the Lower Tanana word or phrase that is spoken in the file. For example, the *Na'indheli'*? (Are you hot?) audio file is named 31-Na'indheli'\_mp3. The rest of the audio files were recorded by myself as I reviewed the cards with AnkiDroid. Consequently, those audio files are in .3gp format and are named according to AnkiDroids default naming convention.

### The “Tags” field

Studying linguistics and grammar may be interesting, useful and a path you wish to pursue ultimately or even simultaneously while using these cards. However, I do not wish it to be a prerequisite to using these cards! For that reason, such information has not been emphasized in these cards. On the other hand, it has not been omitted either. Instead, such information is stored unobtrusively in the tags of some cards in the case that it might someday prove useful to you.

### Making the cards your own

I encourage you to make these cards your own: edit cards, add cards, delete cards, add pictures, audio, and hints. The cards are a learning tool for you and should be shaped and molded to you. If you find a card you want to add, then add it. If you find it more useful to split the contents of one card onto multiple cards, then split it! If you don't like a card, then delete it! Do not be afraid to delete cards that you do not find useful or that you don't care to learn.

There are always, *always*, some cards that our brains find especially difficult. You might spend more time trying to remember one single card than you would on ten other cards. In this case, I suggest not struggling to make your brain accommodate the information, but instead changing the information to accommodate your brain! Set the card aside (by clicking the “suspend” button in Anki's card browser), or change how the card is presented, or just delete the card.

### Some suggested changes to make to a card

If your goal is to be able to think in Lower Tanana instead of just translating from English to Lower Tanana, then the best change you can make to a card is to get rid of the English in the question and answer fields (i.e., “Front” and “Back” fields). On the other hand, having the English translation is useful and convenient, so instead of getting rid of the English in your cards altogether, you may want to keep the English translation in the “Notes” field of the card for reference. Ultimately, altering your cards so that the “Front” and “Back” fields contain minimal or no English can be helpful.

The problem of learning and practicing with English on the cards is that it prevents you from thinking directly in Lower Tanana. Practicing with English perpetuates the “translation game” and you don't want to be translating into Lower Tanana, you want to be thinking in it. In order to feel comfortable and natural *speaking* a language, you must become comfortable *thinking* in it. For example, when you see a kettle, you think “*dzaynek*” instead of “kettle...um...*dzaynek*”. Or when you hear music you think “*Ch'edenledok*.” instead of “I hear music. How do I say that in Lower Tanana? Oh yeah.. *Ch'edenledok*!” In other words, you need to relate Lower Tanana words, phrases and



sentences directly to the idea, concept, or physical object instead of translating back and forth in your head. The best way to start practicing associating Lower Tanana directly with the concepts is to stop practicing translation when you study your cards. This means the more English translations you eliminate from your cards, the more you will be practicing thinking in Lower Tanana.

If you want to replace the English with some other cue, it should be something understandable to you that you think up yourself. Each person will come up with different ways to remind themselves of the meanings. Different cards will lend themselves to different substitution strategies. Sometimes, especially for nouns, a simple picture or drawing can replace the English translation. For example, in my personal Lower Tanana deck, for the “*tink’odltiyi*” card, I have replaced the English text “pocketknife” with a picture I took of a pocketknife. The fact that I took the picture myself of my own, familiar pocketknife creates context and personal associations for me, both of which make the card more memorable.

For more complex ideas, it may be helpful to daydream a little and imagine a story that the sentence fits into. You can draw a little cartoon of your story and use that as a cue instead of the English translation. The more interesting and absurd the story, the more memorable it will be. For example, you could imagine a silly story where a man goes hunting but runs into a bear that offers him tea. That one anecdote, could contain all of the following:

<i>Dena nołto' le'anh.</i>	The man is going hunting.
<i>Sresr uko nołto' tadle'an'.</i>	He is going hunting for black bear.
<i>"Yonthegw nołto' esje'anh."</i>	"I am going hunting out there."
<i>"Sresr nedhetl-'anq."</i>	"I don't see black bear."
<i>"Seyekh khwts'en' tesyoyh."</i>	"I am going to my house."
<i>"Sresr netl-'anh."</i>	"I see a black bear."
<i>Sresr yekh dhedo.</i>	A bear is sitting in the house.
<i>Jo lo sresr chwk.</i>	This is a big black bear.
<i>"Tsaiy seghw ninikoyh!" sresr ye'ał deghini'.</i>	"Bring me tea (in a cup)!" the bear said to him.
<i>"Tsaiy k'adi'?" yełni'.</i>	"Do you want tea?" he said.
<i>"Ehę', tsaiy k'at."</i>	"Yes, I want tea."

The process of thinking up substitutions and changing out the translations with non-language cues, stories, and personal associations is time-consuming. However, learning language is time consuming and the time and effort spent working on the cards it is not wasted, as it becomes part of the learning process. The substitution process creates context and personal associations which makes it easier and more fun to learn and remember. The easiest cards to remember are ones that have the most context – cards that have a story attached or, even better, cards that have personal and emotional associations, that remind you of memories and experiences in your own life.

You do not need to have a card for every word and phrase in the language. In fact, you should not; that would be too overwhelming. I do not even recommend that you start our trying to learn every



card in this deck. If you have cards that capture basic principles and represent major principles in the language your brain will start picking out the patterns and remembering words and associations without the need for a specific card for every single word.

## Why personalization is important

If you do decide to make your own cards, keep in mind that the ease of use, effectiveness, and enjoyment of the cards will ultimately depend not on what information a card holds, but on how the information is presented and how the information is formulated. (This is the primary reason I encourage you to change the cards to suit your needs and learning preferences.) Most basically, the smaller chunk of information a card contains, the more effective it will be. For more information about how to formulate cards, see Piotr Wozniak's excellent article "[Effective learning: Twenty rules of formulating knowledge](#)."<sup>19</sup>

## A word of caution on burnout

Like any tool, these cards and Anki itself can be more or less useful depending on how they are used. The main danger is burnout, which is mainly caused by too many cards or poorly formulated cards as the [forum posts of overwhelmed people](#)<sup>20</sup> testify. Trying to review many boring difficult cards every day, day after day, becomes drudgery instead of a light, fun practice that brings you closer to your goals and is a pleasant experience in and of itself. In order to learn, yes, you have to put work in. However, the work should be fun both for your enjoyment and for quality of learning. You learn better when you are having fun.

In order to have the most fun and the most effective learning, it is imperative to make the cards your own. You need to formulate the cards so that they work with your brain instead of against it. You want to help yourself learn the way it is easiest to learn – not the way you feel you *should* learn or the way you think it would be convenient to learn. This means that you should be diligent about modifying and deleting cards to meet your needs.

You must also be strict in *not* allowing yourself to study too many new cards in a single day! Although your enthusiasm may easily carry you through that day's review, long term learning is a marathon, not a sprint. You must pace yourself. What seems like a ridiculously slow pace in the beginning does save time over the long run. Your enthusiasm is a precious resource that needs to be carefully managed and should not be squandered by setting yourself up for exhaustion and discouragement in the future.

19 <https://www.supermemo.com/en/articles/20rules>

20 <https://forum.koohii.com/thread-7513.html>

# Conclusion

This tool provides a path to learning. You can either use it as-is, but it is also extremely customizable. The spaced repetition allows for long term retention. It allows more incorporation of memory techniques, such as representing concepts with pictures, in order to practice thinking instead of just translation. It can be adapted to other languages. The digital format is easy to widely distribute. The information contained in the cards may easily be repurposed for other projects due to the open format in which Anki stores its data.

I hope that these cards increase the accessibility and usefulness of materials currently archived in ANLA. I hope they help carry some of the Lower Tanana culture into the future. I hope they help someone.

It's important to distribute and use this information. Language carries our culture and our knowledge. Language tells us about the breadth of human experience and capability. It carries our understanding of the world, our traditions, our knowledge of the environment, our way of life. It's a link to our ancestors. Each language is a puzzle piece in the picture of who we are as humans. It reveals who we are by revealing our values and worldview. If we wish to answer this question, we can't afford to lose the puzzle pieces that show us who we are and who we have been.

Lower Tanana expresses and encapsulates a unique, precious understanding of the world. When a language is lost, a people lose their unique linguistic heritage and an irreplaceable link to their ancestors. All of humanity loses a broader and deeper understanding of the world, our environment, and of ourselves. What we have in our languages is precious, easy to overlook, and easy to lose. The knowledge and perspective of the people who came before us is worth saving, worth learning, and worth relearning.

# APPENDICES

## Card sources

### Ellen Frank's Language Lessons

Ellen Frank's [Lower Tanana Athabascan Language Lessons](https://www.uaf.edu/anlc/publications/detail/index.xml?id=159)<sup>21</sup> is a booklet, published in 2008, with 12 lessons, one for every month. Each lesson contains common words, phrases and sentences. The booklet is accompanied by a CD containing audio tracks for each item. The project was born of recordings made in 1996, a collaboration between Lower Tanana speaker Ellen Frank of Minto, AK and linguist James Kari. Linguists James Kari and Siri Tuttle edited and prepared the original material for publication in 2006. Ellen Frank translated the phrases and recorded audio of the phrases. The entirety of this wonderful book and accompanying audio are included in these cards.

### Janna Urschel's Verb Paradigms

Janna Urschel's thesis, [Lower Tanana Athabascan Verb Paradigms](https://www.uaf.edu/anla/collections/search/resultDetail.xml?id=TN006U2006),<sup>22</sup> was completed in 2006. The core of Urschel's thesis are tables of related verbal forms called verbal paradigms.<sup>23</sup> The verbal forms Urschel includes vary by their classifier, subject, mode, conjugation, and negation prefixes. Urschel chose what to include based on representativeness and usefulness. In order to explain what these prefixes mean in Athabascan verbs and how they function, Urschel included an introductory grammar outline and guide to verb structure in her introductory material.

In her own words, Urschel undertook her work in order to explore the questions: "What kinds of combinations of the classifier, subject, mode, conjugation, and negation prefixes are possible in the Lower Tanana language?" and "What forms will such combinations take?" (Urschel 2006, 1) In exploring those questions, she worked with four speakers of the Minto-Nenana dialect of the Lower Tanana Athabascan language: Isabel Charlie, Sarah Silas, Geraldine Charlie, and Neal Charlie. The resultant work, *Lower Tanana Athabascan Verb Paradigms*, is a wonderful resource which includes much technical information.

21 <https://www.uaf.edu/anlc/publications/detail/index.xml?id=159>

22 <https://www.uaf.edu/anla/collections/search/resultDetail.xml?id=TN006U2006>

23 For example, a verbal paradigm for the English word "be" in the present tense would look like this:

	<i>Singular:</i>	<i>Plural:</i>
<i>1<sup>st</sup> person:</i>	I <b>am</b>	we <b>are</b>
<i>2<sup>nd</sup> person:</i>	you <b>are</b>	you <b>are</b>
<i>3<sup>rd</sup> person:</i>	he/she/it <b>is</b>	they <b>are</b>

## Siri Tuttle's Pocket Dictionary

Linguist Siri Tuttle's 2009 dictionary, [\*Benhti Kokht'ana Kenaga\*](#)<sup>24</sup> (English title: *Minto Lower Tanana Athabascan Pocket Dictionary*) has approximately 2,000 entries and examples and is arranged alphabetically by English translation. The Lower Tanana title of the book is one chosen for it by Minto elders (Tuttle 2009, v).

Dr. Tuttle relied on her own work and on previously existing documentation, including Michael Krauss's and James Kari's work, to compile the dictionary as well as the help of Lower Tanana speakers Neal and Geraldine Charlie, Sarah Silas, and Isabel Charlie (Tuttle 2009, vii).

## James Kari's Draft Dictionary

One of the resources Dr. Tuttle used in creating her 2009 dictionary, [\*Lower Tanana Athabascan Dictionary\*](#),<sup>25</sup> is perhaps the most comprehensive reference for Lower Tanana. Linguist James Kari compiled the dictionary in 1994 in draft form. Like Dr. Tuttle's dictionary, Dr. Kari's dictionary draws on previously existing documentation, especially Michael Krauss' work.

Dr. Kari included not only Lower Tanana words that had been documented, but he went a step further by looking at Koyukon and other related languages and making guesses as to words in Koyukon that are likely to exist in some form in Lower Tanana but have not been recorded or verified by native speakers (Kari 1994, 521). (These guesses are clearly marked by the symbol of a pointing index finger (☞) next to the entry.) A digital version of the dictionary is available through ANLA under Ms. TN981K1994bylo and bound copies can be purchased through ANLC.

Dr. Kari thanks many Lower Tanana speakers for their help: Evelyn Alexander, Laura Anderson, Elsie John, Isabel Charlie, Peter John, Linda Charlie, Howard Luke, Moses Charlie, Sarah Silas, Teddy Charlie, Elsie Titus, Johnny David, Matthew Titus, Ellen Frank, Robert Titus, Paul George, and Wilson Titus.

## Michael Krauss' Noun Dictionary

Linguist Michael Krauss did some of the first documentary work on Lower Tanana in the 1960s. From this initial research, much has been produced. Krauss' 1960s work proved fundamental for the later dictionaries by Kari in 1994 and Tuttle in 2008. Before that, though, the 1960s work was used as a base for a noun dictionary by Krauss himself.

Krauss began work on his 1974 manuscript dictionary, [\*Minto-Nenana Athabascan Noun Dictionary\*](#)<sup>26</sup> (*Preliminary Version*), in 1961 in collaboration with Teddy and Moses Charlie. Later, Krauss incorporated work with Peter John and Walter Titus. The dictionary lists nouns arranged into categories, such as "Mammals," "Birds," etc.

In adapting material from this dictionary into this flashcard project, Krauss' original categories have been preserved in the form of tags, although the exact wording may be different. For example, I

24 <https://www.uaf.edu/anlc/publications/detail/index.xml?id=170>

25 <http://www.uaf.edu/anla/collections/search/resultDetail.xml?id=TNMN981K1994b>

26 <http://www.uaf.edu/anla/collections/search/resultDetail.xml?id=TNMN961K1974a>



changed Krauss' heading, "Parts of the Body," and subheading, "Body Products and Diseases," to the tag "Anatomy" in the cards. I have included the entirety of the 58-page version of TNMN961K1974a in these flashcards.<sup>27</sup>

Krauss points out that the dictionary contains about 1000 items, including 40 placenames and there are certain to be mistakes in the dictionary. Krauss thanks speakers Teddy Charlie, Moses Charlie, Peter John and Walter Titus.

## Michael Krauss' Stem File - Complementary Resource

Linguist Michael Krauss' *Minto Stem File*<sup>28</sup> is a collection of basic building blocks of Lower Tanana words called stems. Krauss did much work on Lower Tanana in the 1960s that was never published. This work is housed in ANLA and the stem file is part of it.

The stem file originally was a sort of analog database created in 1962. It consists of about 1,000 index cards, each containing information on a Lower Tanana stem and examples of words containing each stem. Eventually the cards were xeroxed and later the xeroxes digitally scanned. The resulting 90 page PDF is available to download through ANLA. I did not include the contents of the stem file in the cards, but I did use the stem file as a reference while I made the cards. Additionally, James Kari's 1994 draft dictionary uses Krauss' file as a base and so supersedes Krauss' original stem file.

## Audio Files

The cards are accompanied by audio files. As each card is displayed in Anki, the written Lower Tanana word will be presented and the accompanying audio file will play automatically. (This autoplay feature may be turned off. Audio files may also be replayed with a repeat button.)

The speakers in the audio files come from various sources. Native Lower Tanana speaker Ellen Frank included an accompanying audio CD for all sentences in her *Lower Tanana Language Lessons*. I have split the audio from the CD into individual sentence files and included it with the sentences sourced from her material. For the remaining sentences I have recorded myself saying the words and phrases. Ideally more recordings could be made by remaining Lower Tanana speakers.

## Orthography

Over the years, several different orthographies, or systems of symbols or letters used to write a language, have been used to record Lower Tanana. Each orthography used in the texts that I refer to has been designed by a linguist to reflect the language as closely as possible. This means that words are generally spelled how they are pronounced. There is nothing akin to "bow" and "bough" or "through," "dough" and "cough" in English. Because all the orthographies have been designed to represent the language, few differences exist between them. The system used for the cards is the orthography used in

27 Specifically, the contents of the nearly identical TNMN961K1974a.pdf, TNMN961K1974af.1.pdf, TNMN961K1974a\_Minto\_dictionary.pdf, and TNMN961K1974a\_Minto\_dictionaryf.1.pdf have been included.

28 <https://www.uaf.edu/anla/collections/search/resultDetail.xml?id=TNMN961K1962b>

the 2009 dictionary, *Benhti Kokht'ana Kenaga'* (*Minto Lower Tanana Athabascan Pocket Dictionary*), by Siri Tuttle.

However, if you want to use different resources, it is important to be aware of what those differences are. Mainly, orthographies differ in how and if nasality is represented (e.g. *q* or *a* or *á*), how vowel sounds are represented (e.g. *u* or *w*, *oo* or *u*), and how the voiceless velar fricative (as in the word *xat*, “pack”) is represented (*kh* or *x*). Below is a chart outlining the writing systems. The “Krauss (Kh)” column contains Krauss’ orthography.<sup>29</sup> The “Kari (X)” column is the orthography used in Kari’s 1994 dictionary. The “Tuttle (Kh)” column is from Tuttle’s 2009 dictionary. IPA examples are from Janna Urschel’s *Lower Tanana Athabascan Verb Paradigms*; Urschel’s source for the IPA example was James Kari.

IPA letter	English example	English example IPA	Krauss (Kh)	Kari (X)	Tuttle (Kh)	LT word (in Kari (X) notation)	English translation	IPA word
æ	cat	[k <sup>h</sup> æt]	a	a	a	sanh	star	sæŋ
æ̃	-	-	q	q	á	netl-ilq	he didn’t see it	nætʃilæ̃
ə	Tina	[tʰi:nə]	e	e	e	let	smoke	læt
ə̃	-	-	ę	ę	é	ęhe’	yes	əhə̃ʔ
i	free	[fɹi:]	ee	i	i	desni	I said	desni
ɑ	hot	[hat]	o	o	o	oyh	snowshoe	ɑç
u	boot	[bu:t]	oo	u	u	tu	water	t <sup>h</sup> u
ũ	-	-	qq	q	ú	ixq	in vain	ixũ
ʊ	-	-	u	w	w	kwn’	fire	k <sup>h</sup> ʊnʔ
ʔ	uh-oh	[ʰʌʔoʊ]	’	’	’	be’ot	his wife	bəʔat
b	aback	[ə’bæk]	b	b	b	baba	food	bæbæ
m	him	[hɪm]	m	m	m	Menhti	Minto	məŋt <sup>h</sup> i
tʃ	leach	[’li:tʃ]	ch	ch	ch	chonh	rain	tʃan
tʃ’	-	-	ch’	ch’	ch’	ch’wx	big	tʃ’ɔx
t	stop		d	d	d	dena	people	tənæ
dð	-	-	ddh	ddh	ddh	ddheł	mountain	dðəl
ð	this	[ðis]	dh	dh	dh	ch’edheth	skin	tʃ’əðəθ
θ	thin	[θɪm]	th	th	th	thoyh	sand	θɑç
dl	-	-	dl	dl	dl	edli	cold	ədli

29 This is the orthography Krauss used in his 1974 noun dictionary, as seen earlier in this paper. There is one minor difference, however; in the noun dictionary, vowels were not marked for nasalization.

dz	-	-	dr	dr	dr	dranh	day	dʒæn
dz	-	-	dz	dz	dz	dzenh	muskrat	dʒən
k			g	g	g	gwx	rabbit	kɔx
ɣ	-	-	gh	gh	gh	seghu'	my eye	səɣu?
x	-	-	kh	x	kh	xaɬ	pack (noun)	xæɬ
h	high	haɪ	h	h	h	haɬ	trap (noun)	hæɬ
dʒ	jump	dʒʌmp	j	j	j	jega	berry	dʒəkæ
kʰ	kiss	kʰɪs	k	k	k	yɪtlkwɪh	he poked it	jɪtlkʰɔʃ
k'			k'	k'	k'	k'o'	arrow	k'aʔ
l	let	lɛt	l	l	l	seliga'	my dog	səlɪkæ?
ɬ	-	-	ɬ	ɬ	ɬ	ɬuk'a	fish	ɬuk'æ
n	nice	naɪs	n	n	n	tenghetl-'ɪɬ	I will see it	təŋɣətɬɪɬ
ŋ	-	-	nh	nh	nh	nenh	you	nən
ʃ	sheep	ʃi:p	sh	sh	sh	shath	wart	ʃæθ
tʰ	tick	tʰɪk	t	t	t	tenh	ice	tʰən
t'	-	-	t'	t'	t'	t'asr	charcoal	t'æʃ
ɬɪ	-	-	ɬɪ	ɬɪ	ɬɪ	ɬɪwx	oil	ɬɔx
ɬ'	-	-	ɬ'	ɬ'	ɬ'	ɬ'ul	rope	ɬ'ul
ɬʃ	-	-	tr	tr	tr	tretr	dry wood	ɬʃətʃ
ɬʃ'	-	-	tr'	tr'	tr'	tr'axa	woman	ɬʃ'æxæ
ts			ts	ts	ts	tso'	beaver	tsaʔ
ts'	-	-	ts'	ts'	ts'	ts'eba	tree/spruce	ts'əbæ
tθ	-	-	tth	tth	tth	netthi'	your head	nətθiʔ
tθ'	-	-	tth'	tth'	tth'	tth'ok	dish	tθ'ak
j	you	ju:	y	y	y	yo	sky	ja
ç	-	-	yh	yh	yh	thoyh	sand	θaç
z	zoo	zu:	z	z	z	nogelzut	he slid down	naɣəlzut
s	sand	sænd	s	s	s	si	me	si
zɪ	-	-	zr	zr	zr	nezrunh	it's good	nəzɪn
ʃ	-	-	sr	sr	sr	srisr	sheefish	ʃɪʃ

# Anki

## What is Anki?

Anki is a tool for language learning was made by a computer programmer who was studying Japanese. The programmer, Damien Elmes, became frustrated with the software options available to help him study and memorize Japanese words. He used his programming skills and to make a tool that satisfied what he wished for in language learning software. Because Damien Elmes was studying Japanese, he named his new program Anki (暗記), the Sino-Japanese word for “to memorize.” Damien used another program called Supermemo, developed by Piotr Wozniak to aid memorization, as a base for Anki (Elmes n.d.).

## Software availability

Anki software is available as a free and open-source program for computers. In addition, a third party version of Anki called AnkiDroid is available for Android smartphones and is free of charge. A version for iPhone called AnkiMobile is available for pay. At the time of this writing, desktop versions of Anki may be downloaded at <https://apps.ankiweb.net>.

## Support for Anki

Some useful aspects of Anki are that it has an active user base and good documentation. This means that any problem or question you have is likely answered or solved either in the [manual](#),<sup>30</sup> the [official Anki support forum](#),<sup>31</sup> or in other forums like [StackExchange](#)<sup>32</sup> and [reddit](#).<sup>33</sup> Through Anki’s online server, [AnkiWeb](#),<sup>34</sup> users can upload their personal decks into the cloud and sync across devices. Ankiweb even allows users to [share decks of cards](#)<sup>35</sup> or even [add-ons](#)<sup>36</sup> created by individuals that extend the native capabilities of the program and benefit the whole community.

## The spacing effect

When you first learn a totally new vocabulary word it is easy to forget it. You need to review the next day, or even sooner, to keep the word in your memory. As you become more familiar with the word it takes longer and longer to forget and the intervals between reviewing a particular card become longer and longer. Soon, you don’t have to review that word daily anymore but instead you can wait to review weeks, months and eventually years without forgetting (Elmes n.d.).

30 <https://apps.ankiweb.net/docs/manual.html>

31 <https://anki.tenderapp.com/discussions>

32 <https://languagelearning.stackexchange.com/questions/tagged/anki>

33 <https://www.reddit.com/r/Anki/>

34 <https://ankiweb.net/about>

35 <https://ankiweb.net/shared/decks/>

36 <https://ankiweb.net/shared/addons/>



## **What is spaced repetition?**

Spaced repetition software takes advantage of this by reminding you right before you forget. Remembering just on the edge of forgetting is the most efficient use of time and creates the strongest, most lasting memories. The ideal time to review a card is the stage when you can't immediately recall but after a second you remember. It is at this time that Anki tries to remind you. This way you hopefully do not waste much time reviewing something too early which you already know well and can recall with ease or reviewing too late after you have already forgotten (Wyner 2014).

# **Lower Tanana Language and Culture**

## **What is the Lower Tanana Language?**

Lower Tanana is the language of the Native peoples who lived in Interior Alaska along the “middle and lower-middle stretches of the Tanana River.” (Urschel 2006, 3) Lower Tanana is spoken in Minto and Nenana and was spoken in and around the area where modern-day Fairbanks lies.

Lower Tanana is from a very large family of North American languages, the Athabascan or Na-Dene language family. The Athabascan family range extends from Interior Alaska, down through western Canada with some small spots along the Pacific coast and a larger area in the American Southwest. The southernmost tip of the range extended all the way down to Mexico.

The large Athabascan language family is broken into three subdivisions: Southern Athabascan or Apachean (which includes the Athabascan languages spoken in the American Southwest, like Navajo); Pacific Coast Athabascan (which includes the Athabascan languages spoken in small areas of California and Oregon); and Northern Athabascan.

Northern Athabascan languages belong to the Athabascan-Eyak branch of the Na-Dene language family and are spoken in Alaska and Canada. While Eskimo-Aleut languages are spoken along the coastal regions of Alaska, Canada and Greenland, Athabascan languages are spoken throughout the interior of Alaska and western Canada. There are over 30 Northern Athabascan languages. Alaskan Athabascan languages include Ahtna and Dena'ina in the south and Deg Xinag, Holikachuk, Koyukon, Upper Kuskokwim, Lower Tanana, Tanacross, Upper Tanana, Tuchone, Gwich'in and Han in Interior Alaska.

Tanana languages were spoken throughout the Tanana River drainage basin along the middle and lower stretches of the Tanana River in Interior Alaska. The Goodpaster River separated Lower Tanana from the upriver languages of Upper Tanana and Tanacross. Lower Tanana was spoken along the Tanana River from Minto in the north to the Salcha River in the south. Distinct dialects of Lower Tanana are the Minto-Nenana dialect spoken “north and south of the Tanana River in Minto Flats and the Nenana River drainage” and the Salcha-Goodpaster dialect “of the Chena River drainage” (Kari 1994, ii). Upper Tanana and Tanacross are closely related to Lower Tanana.

## Interior Athabaskan Social Structure

The people of Interior Alaska lived, for thousands of years, in a manner and rhythm that would be recognizable to the very first inhabitants of the area. The speakers of Lower Tanana traditionally lived along the Tanana River in small bands of several nuclear families. Like all Alaska Natives, the Tanana Athabascans depended directly on the natural world for their survival. Their lives and routines were shaped primarily by the seasons.<sup>37</sup> The harshness of the climate and the scarcity of resources in Interior Alaska dictated the yearly patterns of movement. The people lived a semi nomadic lifestyle. Larger groups would periodically disperse, sometimes into groups as small as a single nuclear family, to acquire resources before coming back together to share resources. Cultural events like potlatches also distributed resources among groups (Olson 1968, chap. 1).

The Interior Athabascans had a complex social structure, both within their linguistic group, and even extending to other groups. Kinship terms reflect the matrilineal, moiety-based system to which many Athabaskan groups, including the Lower Tanana, adhered (Olson 1968, 70). Marriages between individuals of different moieties and the special hunting partner relationship between men, helped ensure connection and cooperation between groups (Olson 1968, 74). Athabascans, such as the Koyukon, whose lands bordered with Eskimo-Inuit lands, would often form relationships with their Eskimo neighbors (Wright 1995). The relations between Eskimos and Athabascans and between different Athabaskan groups were not always friendly. It is important to understand that the borders of territories of different groups were constantly shifting in response to a multitude of social and environmental pressures. Disputes over territories, resources, raids by neighboring groups, and other conflicts sometimes resulted in feuds and wars.

## The Yearly Cycle

As the resources in Interior Alaska are highly seasonal, much of the pattern of life for the inhabitants was dependent on the yearly cycle. Interior Athabascans all relied on caribou<sup>38</sup> hunting and fishing, to differing extents. Generally, people dispersed in the winter to hunt and spent summers at fish camps. Depending on the available resources in their area, some groups relied more on fishing, and some more on hunting.<sup>39</sup> Salmon was a primary resource, except for groups too far inland for the salmon run, such as the Upper Tanana. The Upper Tanana people relied instead on whitefish.

Summer was the time to take advantage of salmon runs, if available, and vegetation. In late spring or early summer, a campsite and smokehouse were set up at a good site for fishing (Jimerson

37 The reliance on and observance of the natural world can be seen in the names of the months in Lower Tanana. Each month is named for the important activities or events that take place during the month: e.g. "the month eggs are laid" (June), "the month they have their young" (May), "the month they fish with hooks" (October), "the month when they swim back", "eagle month" (February) (Tuttle 2009).

38 By the 1930s, caribou had mostly disappeared from the Interior and had been replaced by moose as the large game animal (Olson 1968, 171–72).

39 The traditional story, "Wolf and Otter" is, I believe, demonstrates cooperation between caribou hunting people (Wolf) and fishing people (Otter). A recording of Moses Charlie telling "Wolf and Otter" to Michael Krauss in 1961 is available through ANLA.

and Partnow 1975, chap. 5). Summer tents were often about 14 feet in diameter and made out of a bent wooden frame fitted with birch bark coverings (Olson 1968, 26–27).

During the summer, people caught, cut, and ate fish both fresh and dried. People dried, smoked and cached fish for later use. July was the prime month for catching salmon. People picked and enjoyed raspberries, sometimes as a part of "Indian ice cream".

Later in summer and in fall, more berries and fruits ripen including cranberries, crowberries, rose hips, bearberries and blueberries. Families would gather these berries and Indian potatoes<sup>40</sup> to include in their diet. As summer turned into fall, focus shifted from fishing to the hunting of moose or caribou. Meat was dried and smoked, hides were tanned. During this time of year caches were filled to provide during the winter.

In the winter, resources were much more limited. Beavers could be hunted with snares set though the ice near beaver houses in February and March. Some types of fish could be caught through the ice. Winter was a time for trapping and skin-sewing. Time was passed on long, dark winter days by telling stories.

Winter tents were made similarly to summer tents but were covered with skins. Another type of dwelling, a more permanent soil covered log structure with a footprint of about 12 feet by 12 feet, might also be used depending on the environmental conditions and the length of time planned to be spent at a particular location (Olson 1968, 26–27).

Spring brought muskratting time and the return of waterfowl, which played an important role in the diet of the people of Minto Flats. Before breakup in late April or early May, families moved out to a muskrat camp (Olson 1968, 170–73). As summer approached, the cycle started again.

For the first hand accounts of a traditional lifestyle and traditional skills, which were used to inform this description of the yearly cycle, see Peter John's *The Gospel According to Peter John*, Shirley David Jimerson's *Tetlin as I Knew It*, Velma Wallis's *Raising Ourselves* and the Lower Tanana narratives described in the "Available resources" section on page 5.

## Language and culture

Any language tells the stories of the lives and values of the people who speak it. Languages reveal what is important to name and differentiate, what we spend our time doing, what tools we use. A language will keep changing gradually to reflect the values and changes in a culture as long as it continues being used. Lower Tanana, too, tells the stories of generations who spoke it. From extensive vocabulary related to the natural world, to newer words borrowed from Russian and English, the traditional way of life as well as the changing activities and technologies brought through contact with Euro-Americans is identifiable in the language.

This cultural information about way of life is reflected in the language. Of the attested documentation, names for plants, animals and birds make up a large percentage. The Lower Tanana language abounds with words describing types and parts of animals and plants, including many anatomical terms, as well as words describing kinds of animals and relationships among animals. In

40 Latin name: *Hedysarum alpinum* L.

English animals are generally referred to in general terms (eg “caribou”) although some animals may have a special term for males, females or young (eg “buck,” “doe,” “calf”).<sup>41</sup> As noted by Michael Krauss in 1974 Noun Dictionary, Lower Tanana has, not only a general word for caribou, *bedzey*,<sup>42</sup> but also words for the largest male caribou, *bedzeychukh*, a female caribou, *begoyech'eel'anee*, a medium sized caribou, *detsugayee*, a small caribou, *datsughee*, a caribou calf, *bedzeygoya*, and even a word for a picked-on male caribou, *bek'uth ch'ultr'eedee* (Krauss 1974, 5–6).

Similar patterns in Lower Tanana exist for other animals including black bears, *sresr*, which has separate terms for a pregnant female, *ch'egheneenodhtanee*, and a mother with cubs, *begyekhoolanee* and moose, *deneege*, which in addition to its terms for bull and cow moose, has at least four more terms for types of bull moose<sup>43</sup> and a word, *choltayee*, which means “a cow moose with first young” (Krauss 1974, 6–7).

Similarly, very specific anatomical terms exist. For example, there are separate words for fat, depending on which organ the fat surrounds: the intestines, *ch'echoyoo'*, the large intestine, *ch'entthedla'*, the heart, *ch'edranotl*, and even a term for the fatty meat on a bear's shoulder, *ch'eleekhdee'ona* (Krauss 1974, 8).

The range and specialization of these words reveals what concepts are important for Lower Tanana people living a traditional subsistence lifestyle to distinguish, which are important enough to have their own simple label, and which are not. Like all languages, Lower Tanana reflects the value, worldview and cultural knowledge of the people who speak it.

41 However, the distinction in English animals terms is less fine even when special terms for male animals, female animals and their young do exist as many words are recycled among species. “Buck” and “doe” may also refer to, among other things, male and female deer, rabbits or kangaroos. “Calf” may also refer to a baby whale or elephant. Many younger English speakers no longer have a distinction, for example, between “cow,” “bull,” “steer” and “cattle” for calling any singular animal “cow” and any group “cows” regardless of gender or castration status. Lower Tanana does have at least one such term recycled among species: *ch'ech'oneyoyee*, “a young moose, caribou, sheep, no more going with its mother” (Krauss 1974, 8).

42 Lower Tanana terms in this section of the paper from Krauss's 1974 noun dictionary and are written in the orthography Krauss used for that work which differs from Tuttle's orthography used in the cards.

43 largest bull moose: *ch'eyedra'*  
 second largest bull moose: *noochoonee*  
 middle-aged bull moose: *dedaya*  
 four-year-old bull moose: *deto'tth'ena' khenee'eelyoyee*  
 two-year-old bull moose: *ch'eelgezra*

# References and Resources

## Recommended reading

For a bird's eye view of the historical timeline and the larger shape of events and effects, I recommend:

*Crooked Past* by Terrence Cole,  
*Minto, Alaska: Cultural and Historical Influences on Group Identity* by Wallace Olson,  
*The Last Great Indian War* by Miranda H. Wright,  
*Episcopal Women Missionaries as Cultural Intermediaries* by Janine Dorsey and  
*Rifles, Blankets and Beads* by William Simeone.

For person-level, cultural understanding I recommend biographies and narratives like:

Evelyn Alexander's *A Life History in Her Own Words*  
Peter John's *The Gospel According to Peter John*  
Shirley David Jimerson's *Tetlin as I Knew It*  
Ellen Frank's *K'okhethdeno de'on: Moving Around in the Old Days* and  
Teddy Charlie's *Long After I Am Gone: Ode Setl'oghwnh Da'*  
Velma Wallis' *Raising Ourselves*

A valuable resource for how to create cards without translations and for how to use Anki for language learning in general is the book *Fluent Forever* by Gabriel Wyner.

Other resources which were helpful to me as I researched and wrote and which may be helpful to you are included in the following bibliography.

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